

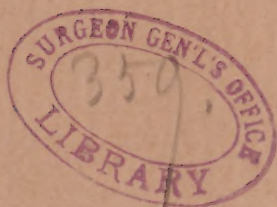
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G O E L E T, (A. H.)

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By AUGUSTIN H. G O E L E T, M.D.,

NEW YORK.

Reprint from the North Carolina Medical Journal, 1888.



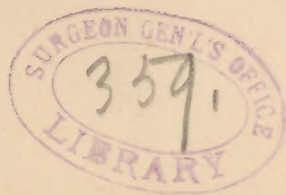
ELECTROLYSIS IN GYNÆCOLOGY.

BY AUGUSTIN H. GOELET, M.D.,

NEW YORK.

While I shall endeavor to give a general outline of the use of electricity in gynæcology, it is not within the scope of this article to describe the technique of its application; but the cardinal principles involved will not be lost sight of, for without them it would lose much of its practical value. In view of the fact that so much has been written recently of this agent and of its power to remove conditions which, heretofore, we thought only amenable to laparotomy, leads us to the conclusion that ultimately it will supplant the knife in many instances where this has been thought the only remedy. The substitution of electricity for laparotomy demands the greatest consideration, especially when we are reminded that often, after submitting a woman to a dangerous operation, her suffering is in no way lessened, and we are obliged to resort to other means for relief, having accomplished nothing save irreparable sterility. Advocates of operative procedure may claim that this condition was present before. But might not that have been overcome if the condition which caused it was relieved by appropriate electrical treatment? Certainly there would be no chance after the removal of the tubes and ovaries. Its comparative immunity from danger recommends this agent very highly to our favor as a measure to be resorted to and given thorough trial in all conditions where the statistics of reliable authorities show it to be beneficial, before laparotomy is considered to be called for.

In administering electricity it is necessary to bear in mind the different action of the two poles. 1. The *positive* pole is *styptic* and *anti-hemorrhagic* where used within the uterus. 2. The *positive* pole has marked *anodyne* properties. 3. The *negative* pole is *caustic*, and care must be observed in using it. 4. The *negative*



pole has marked *electrolyptic* action (alterative and absorbing), and it is under the influence of negative galvanism that tumors are made to disappear and inflammatory deposits are removed. It is also necessary to bear in mind that the electrode for the use of the positive pole must be made of a metal which is not acted upon by this current, as platinum or aluminum. The reason for this is that acids collect at the positive pole and most metals are corroded by them. The negative electrode may be made of copper or brass nickel plated. But in using the negative electrode in the vagina it should be covered with absorbent cotton (moistened) to lessen the caustic effect. It need not be covered with cotton when used in the uterine canal. The external electrode should be large, and I may say the size should be increased with the strength of the current. The smaller the electrode the greater will be the discomfort to the patient in the passage of the current. When currents of great intensity are used for the removal of tumors it is necessary to have the current evenly distributed over a large surface externally.

Much has been written of late in favor of electrolysis in uterine fibroids, a condition which has for a long time baffled our best directed efforts. Ergot has proved only slightly beneficial in a small minority of instances. And hysterectomy, the latest craze, is anything but a desideratum. Apart from the danger which is incurred, the result, if successful, leaves us little to be proud of, for by it, we must confess, we have been guilty of mutilation. By it we deprive woman of the only true emblem of her sex, and she is doomed to go through the remainder of her life wombless. Electrolysis, which is capable of so much good, without risk, leaves the patient with un mutilated procreative organs, and while in some instances she cannot be pronounced cured in the strictest sense, she has been so far relieved as to make life a pleasure instead of a burden, and the tumor has been so much reduced in size as to give no further inconvenience. They are, as Apostoli styles it, "symptomatically cured."

The weight of evidence seems to be in favor of Apostoli's method, which, in contradistinction to the other methods, means puncture with one pole only; that is, one pole (negative) of the battery is connected with the internal electrode, which penetrates the tumor through the vagina when it can be reached there, and the other pole (positive) connected with a large, moist, clay cake electrode on the abdomen. When the tumor is not accessible through the vagina,

the intra-uterine application of the positive current is used, and the current is much weaker and the applications are more numerous. But the weight of opinion is against the intensity of the current (250 to 500 milliampères) as used by him. This enormous strength of current would appear to be a grave objection to this mode of treatment from the risk involved, and it is clearly evident that it should not be attempted by any one who is not thoroughly conversant with every detail. Apostoli, while he claims now immunity from unpleasant sequelæ, confesses many serious consequences before he mastered the subject. He has been persistent, and his results are now truly brilliant.

In this country the same results have been claimed for a current of less intensity (less than 100 milliampères) but of longer duration, and consequently there is less risk. What matters it if we take longer to cure the patient and the applications require more time, if by doing so we reduce the danger to nothing.

But what is claimed for the treatment of uterine fibroids by the electrolytic method? Dr. Apostoli says: "1. Hemorrhage is controlled. 2. The troubles of menstruation, dysmenorrhœa and nervous disturbances are relieved. 3. The direct pains in the growth and pains arising from mechanical pressure are removed. 4. The harrassing series of reflex pains, rectal and vesical, are destroyed. 5. The tumor is, in a majority of instances, made to disappear. 6. The treatment is simple, any one in possession of the required apparatus being able in a short time to administer it. 7. The mortality following this method is *nil*, providing the directions for operating be faithfully carried out. 8. Relief of symptoms in some cases must be accepted in lieu of cure."

Does not this, coming from such high authority (who, I may add, is honest enough to confess his errors) put a veto upon hysterectomy? The most successful laparotomists must acknowledge that they can promise no such relief by the dangerous operation of hysterectomy. *Conservatism is gaining ground and the fashion of laparotomy has seen its best days.*

But the superiority of electricity over laparotomy is not limited to uterine fibroids. It has been successfully used in diseases of the appendages where high authority pronounced their removal necessary. In all conditions, except where the presence of pus can be accurately diagnosticated, it may be considered applicable. And in chronic inflammatory conditions of the surrounding tissues relief

may be confidently looked for by electricity appropriately administered. By it the circulation is regulated and absorption is favored. Here advantage is taken of the anodyne properties of the positive pole and the absorbing qualities of the negative.

I call to mind a case which will serve to illustrate the prompt action of electricity in relieving a condition which a prominent gynæcologist thought required laparotomy.

Case.—When first called to see Mrs. C., aged 28 years, mother of one child, she was suffering from the effect of a ruptured pyosalpinx of the right side, which, probably because of previous pelvic inflammation and adhesions, did not rupture into the peritoneal cavity, but discharged through the rectum. She had recovered sufficiently to be about her room, and the drainage had ceased, but she complained of intense pain, mostly in the left side of the pelvis, which was greatly aggravated at every menstrual period, compelling her to be in bed, and she feared another abscess. Examination revealed the pelvis filled with inflammatory deposit and its contents fixed. On the right side there was not much tenderness to touch beyond what would be expected from the condition of fixation and the recent trouble, but the left side was exquisitely sensitive and showed a condition of enlargement and inflammation of the ovary and tube. No collection of pus could be detected, but she was clearly in a ripe condition. I asked the advice of one of the surgeons of the Woman's Hospital, who, after seeing her, advised the removal of the tubes and ovaries as soon as she could be prepared for the operation. I determined to do all in my power to avert an operation which I felt sure would most likely prove fatal in her condition. After a few week's treatment with cocaine, used as I advised for pelvic pain in an article in the *Boston Annals of Gynæcology* for April, 1888, entitled "Routine Work in Gynæcology and the Relief of Pelvic Pain," she was so far relieved as to be able to get out and come to my office. A systematic course of treatment (twice a week for two months) with cocaine and galvanism, relieved her so that she suffered no pain in walking or riding, as she had done before, and the dysmenorrhœa was comparatively insignificant. The uterus was at that time still fixed, but was not sensitive to moderated pressure, and the left ovarian region was only sensitive to sudden pressure. About this time, contrary to my advice, believing she was well, or nearly so, she removed to another city. I did not see her again for ten months, when she returned to

let me know she was well, having had no trouble nor suffering any inconvenience since. Examination showed her condition much improved. The uterus was somewhat movable, though not freely so, and the vaginal roof was not sensitive to ordinary pressure, though deep pressure in the left ovarian region produced some pain and the ovary was some larger than normal. I advised further treatment to complete the cure, but she thought it unnecessary and would not consent. She has been restored to a life of usefulness by the only safe method of treatment known to me.

It seems pertinent here to explain the method of using cocaine for the relief of pelvic pain described in the article referred to above. The vagina when perfectly clean and free from secretion, becomes a good absorbing surface. This is accomplished by means of a spray of antiseptic solution (not bichloride, which decomposes cocaine) connected with a compressed air apparatus. The vagina is dried with absorbent cotton, then sprayed with the cocaine solution 2 per cent. or 4 per cent., and a non-absorbent cotton tampon, with string attached, is introduced and arranged in such a manner as to prevent the escape of the solution when the patient is on her feet.

This combination of cocaine and galvanism is a method of treatment applicable to a great many conditions of disease of the pelvic organs; conditions either of inflammation or its results in a chronic state, such as endometritis, metritis, perimetritis and cellulitis, and salpingitis and ovaritis. No definite rule can be laid down, however, for either the strength of the current to be used or the position of the poles in every case, for the susceptibilities of patients vary as well as the indications of different conditions, and much depends upon the judgment and experience of the operator.

The cardinal principles enumerated above must be borne in mind, and must be a guide to the treatment necessary. The milliampère-meter to measure the dose is important, for without it the work is necessarily uncertain. The current from ten cells of a freshly filled battery may represent double the number of milliampères which the same number of cells would give after two or three weeks steady use. The intensity of a given number of cells diminishes with constant use. An important point is not to use the battery too long without refilling, or its power is uncertain. If used half an hour a day, it should be refilled at least every month.

In the treatment of uterine catarrh electricity is both safer and more satisfactory than any method yet advised, and authors who

have written recently advising the use of caustic applications, will gladly recall their words. In this condition the negative current, with a suitable electrode, is used until the *os* is patulous, then the positive current is used for its styptic effect. The current strength necessary will vary from four to eight cells of a freshly filled battery of small elements.

I have had made an electrode with insulated handle and three different size points which screw in. The points are two and a half inches long, conical at the distal extremity, and there are three sizes of the French scale 13, 15 and 17. They are made of copper nickel plated, and may be curved to suit the canal. For the positive current I use an aluminium tip a little larger than an ordinary uterine sound. The external electrode is applied either to the back or abdomen.

When it is desired to overcome a flexion or to act only on one part of the canal at a time, an electrode such as is used for stricture of the urethra may be used with the negative current. This is an olive pointed bougie insulated to the tip. The duration of the application may vary from five to ten minutes. No force is to be used in passing the electrode and to avoid giving a shock the connection with the battery must be made before the current is turned on and the strength increased one cell at a time until the electrode passes the obstruction. With the point of the electrode pressing gently, this will take from two to five minutes. The positive electrode must be introduced before the current is turned on.

If the *os* is not patulous, or if the condition is such as demands an alterative action, the negative current is used until this is accomplished, and afterwards the positive, for its styptic effect. Granulations are quickly removed by the negative current, and by increasing the strength of the current a safe caustic effect may be obtained when desired. Flexions which resist ordinary means of relief are very satisfactorily cured by the alterative effect of the negative current at the point of flexion. Apostoli is very nearly right when he says that, apart from malignant disease, he knows of hardly any disease or displacement of the uterus which cannot be either relieved or cured by electricity.

It seems hardly necessary for me to emphasize the necessity of thorough antisepsis in connection with this treatment. In treating tumors by puncture through the vagina a solution of bichloride (1 to 2,000) should be used previously. When cocaine is used I prefer

as an antiseptic a saturated solution of hydronaphthol in water used with a spray. This is said to be equal in antiseptic power to a solution of bichloride 1 to 3,000. It does not decompose the cocaine and has a very agreeable odor.

I have used the term electrolysis in my caption, though not strictly appropriate for this paper, because, had I used the word electricity, it would have included the use of the faradic current which would have lengthened the paper undesirably. Electrolysis refers to the action of the negative pole alone, and I have spoken of both poles under this head, but I trust I have made myself clear to my readers. The negative current is the one most frequently used, however.

It is my intention to take up the subject of the faradic current separately on some future occasion.

243 W. 54th Street.

1. *Adams, John* (1735-1806) - American statesman, lawyer, and diplomat. He was the first Vice President of the United States and the first President of the Massachusetts State Senate. He was also a member of the Continental Congress and the first Secretary of the Massachusetts State Senate.

2. *Adams, John Quincy* (1767-1848) - American statesman, diplomat, and lawyer. He was the second President of the United States and the first Secretary of the Massachusetts State Senate. He was also a member of the Continental Congress and the first Secretary of the Massachusetts State Senate.

3. *Adams, Thomas* (1735-1806) - American statesman, lawyer, and diplomat. He was the first Vice President of the United States and the first President of the Massachusetts State Senate. He was also a member of the Continental Congress and the first Secretary of the Massachusetts State Senate.

4. *Adams, Thomas* (1735-1806) - American statesman, lawyer, and diplomat. He was the first Vice President of the United States and the first President of the Massachusetts State Senate. He was also a member of the Continental Congress and the first Secretary of the Massachusetts State Senate.

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